NON-REGULATORY APPROACHES TO EARTHQUAKE RISK REDUCTION: THE NEW ZEALAND EXPERIENCE

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SUMMARY

This paper outlines the largely non-regulatory approach of New Zealand's government to the way the risks of earthquakes and other natural hazards are managed. It suggests that the traditional approaches of centrally driven, prescriptive mechanisms, are incompatible with the market-oriented mechanisms that are used to manage land use and development of communities in New Zealand. It addresses the rise of risk management processes within the wider public sector as they apply to the management of natural hazards, and highlights the benefits of the risk management approach. It also discusses recent developments and potential future developments to further integrate the risk management approach to natural hazards in New Zealand. Finally, it discusses the advantages of the risk management approach, and the dangers that need to be managed when implementing such an approach.

INTRODUCTION

The reduction of risks associated with earthquakes has been a strong focus of many developed countries over the last few decades. The approaches adopted within these countries have generally focused on the regulation of development. Regulations are often very prescriptive, such as the use of zoning for land-use, and tend to be highly centralised at either the national or state level.

Policy-makers and enforcers of regulations are often quick to claim that the regulations are too limited, and that issues such as property rights, the economic imperatives for development, the costs of altering existing development, or developing in a way that minimises the risks of earthquakes, too often take precedence over the goal of reducing risks.

This paper outlines the largely non-regulatory approach that has been adopted in New Zealand, where the relevant legislation promotes a risk management focus, and where decision-making is decentralised. It argues that this approach is necessary within a market-oriented land-use and development mechanism. It also shows that this approach ensures that the risks are managed at the most appropriate level and helps to ensure that risks are managed as an integral part of decision-making.

NEW ZEALAND REFORM

Since the early 1980s, New Zealand society has undergone fundamental and wide-ranging reform. Most sectors of the economy have been substantially deregulated, while social policy has changed to remove a perceived dependency on the State by many, towards a needs based welfare system.

Alongside these, and other significant changes, many functions of the Government have been significantly devolved, and commercialised. This has been described as an attempt to 'get government out of business while bringing business into government' [May, Burby, Ericksen, Handmer, Dixon, Michaels & Smith, 1996, p.43]

Local government was also extensively reformed. The intention of the reform was to ensure that local government was:

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- more efficient and effective
- more attentive and responsive to the community's needs
- more autonomous, with increased flexibility
- more accountable (including politicians being accountable to the electorate for overall performance). [Department of Internal Affairs, 1994, p.6]

An integral part of this reform was the restructuring of the units of local government. The key change, which was necessary in order to achieve other aspects of local government reform, was the reduction in the number of local government units from 691 to 87 [Howell, McDermott & Forgie, 1996, p.iii].

EFFECT OF REFORMS ON HAZARD MANAGEMENT

Achieving better management of hazards was not an explicit aim of any of New Zealand's reforms. However, the reforms of resource management and building controls have had fundamental effects on the way hazards are managed in New Zealand. It is difficult to appreciate the approach to hazard management in New Zealand without understanding these two areas.

Resource Management Act

The enactment of the Resource Management Act 1991 was an integral part of New Zealand's wider reform, and in itself encapsulated much of the devolution of decision-making to local government. The purpose of the Act is 'to promote the sustainable management of natural and physical resources'. It defines this as the management of the use, development and protection of natural and physical resources in a way, or at a rate which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety.

While Central Government has a role in the Act, most decisions are made (and implemented) by local government [Kerr, Claridge & Milicich, 1998, p.8]. Responsibilities are allocated to regional and district levels of local government.

A key aspect of the Act is the shift from a focus on directing activities (as evident in the previous Town and Country Planning Act 1977) to a focus on avoiding, remedying and mitigating the negative effects of those activities. In tandem with this shift, is a move away from regulatory methods. While such methods may be used, the regional or district council must first have regard to the necessity of using the methods, investigate other options for addressing the particular issue (including non-regulatory), and assess the benefits and costs of the different options. It is important for local authorities to keep the intention of the Act in mind;

> *"The Act was not designed or intended to be a social planning document. Local authorities are no longer required nor are able to direct and control the wise use of resources, they have a passive management function under the Act, enabling rather than directing development"* [Ministry for the Environment 1995, p.4]

The Act also includes a range of requirements relating to public consultation. This is particularly true with regard to the preparation of Regional Policy Statements and Plans, and District Plans, but also extends to hearings in relation to resource consents and other matters.

> *"Underlying the RMA are two key principles about the community's involvement in decision-making. These reflect New Zealand's obligations as a signatory to Agenda 21, which states that in order to improve planning and management systems they should be delegated to the lowest level of public*
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> *authority consistent with effective action. The principles are:*
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> - *That decisions on environmental matters are most appropriately made by the communities directly affected by those decisions...*
> - *That community participation is vital to effective resource management"*
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> [Ministry for the Environment, 1999, p.7]

The management of natural hazards is explicitly addressed within the Act. Each of the elements of the Act (preparation of policies and plans, monitoring, record keeping, providing information, resource and subdivision consents) makes reference to 'avoiding, remedying, and/or mitigating natural hazards'. However, this must be achieved within the overall framework, and utilising the mechanisms, contained within the Act.

Building Act

Compared to the Resource Management Act, the Building Act 1991 has a relatively strong regulatory approach. In addition, it is applied on a national basis, as opposed to the more decentralised approach of the Resource Management Act where there is much scope for different approaches at the regional or district level. However, the Act, and subsequent codes and regulations, are largely administered by the Building Industry Authority, an independent Crown Entity funded by a levy on building consents.

The intent of the Act is to 'safeguard the health, safety and amenity of people, protect other property from damage, and facilitate efficient use of energy' [Building Industry Authority 1997, p.1]. It sets out (and is part of) a three part framework for building controls:

- the Act describes what is covered by building controls and sets down the law for building work
- The Building Regulations contain the Building Code and particular details about the processing of building approvals
- Approved Documents are non-mandatory documents written by the Building Industry Authority to assist people in complying with the Building Code

The Building Code does not focus on how a building should be designed or constructed. Rather, it is a performance-based code that outlines how a building must perform, and objectives to be achieved. As with the Resource Management Act, it reduces, where possible, Government intervention and allows decision-making to be made as close to the source as possible;

> *"The building control system is designed to allow market forces to be combined with regulatory controls to ensure that the statutory purposes and principles of building control can be achieved, with minimal compliance costs"* [Cameron, 1992, p.vii]

With regard to the risks from earthquake, the building code requires that '[b]uildings, building elements and sitework shall withstand the combination of loads that they are likely to experience during construction or alteration and throughout their lives' . In addition, it requires that '[a]ccount shall be taken of all physical conditions likely to affect the stability of buildings, building elements and sitework, including… earthquakes'.

The Building Act is based on the view that individuals may make their own choices, providing they do so on an informed basis, and providing those choices do not have a negative effect on the land, or on other individuals. This is most explicit when dealing with natural hazards such as slope instability (one of the secondary hazard effects associated with earthquakes). As long as the local authority is satisfied that construction will not add to the risk then a building consent may be granted. In these cases, however, the fact that the land is subject to a potential natural hazard consequence will be entered on the title of the land (to protect potential future purchasers) and the local authority will become exempt from liability should the building be damaged by the hazard.

The Building Act also provides local authorities powers to deal with existing buildings that are 'earthquake-prone'. Again, the definition of earthquake-prone is performance-based, and depends on the building structure and the likely seismic events, rather than having technical specifications that apply to all buildings regardless of the actual risk in a particular instance.

Much of the actual implementation of the Building Act is conducted by local authorities (for instance the issuing of Project Information Memoranda and Building Consents). Once again the intention is to allow these authorities, and others involved in the implementation of the Act, to come up with dynamic and innovative solutions that meet their communities needs, rather than a centrally driven system that has a tendency to ignore local needs.

Combined Effect of Resource Management Act and Building Act

While differing in some ways in their approaches to various issues, these two Acts also have many common aspects:

- they both provide enabling frameworks for much of the decision-making by local government, other agencies, and at times individuals (decentralisation)
- they are both concerned with the outcomes, or the effects, rather than prescribing how these will be achieved (with a bias toward non-regulatory methods)
- they both give wide scope for the management of natural hazards as long as this is undertaken within the context of that Act

Together these Acts provide a context for much of the management of natural hazards. A key advantage is that risk reduction measures are considered alongside other aspects of decision-making. Rather than the traditional view held by many that hazard management detracts from development and imposes economic burden, these Acts provide a framework whereby hazard management can be seen as a way to support and enhance development and economic and social well-being.

However, this framework has also created challenges to the practice of managing hazards. The traditional regulatory approaches are inconsistent with both of the Acts mentioned above. Consequently, alternate approaches have had to be found, to ensure that the risks from natural hazard are adequately managed within a largely non-regulatory framework.

RISK MANAGEMENT

Primarily because of the increased decision-making power devolved from central government to local government and others, there has been a corresponding increase in the interest within the wider public sector in risk management. This is evident both in terms of the central government (designing enabling policy frameworks for risk management focused on outcomes and effects, rather than the means of achieving them) and in other sectors such as local government (implementing these frameworks).

Most recent legislation has implicitly (and at times explicitly) put in place frameworks that require a risk management approach. Examples are:

- the Resource Management Act 1991, which includes requirements to identify hazards, assess the implications, and identify options for addressing the risks they pose
- the Biosecurity Act 1993, covering unwanted organisms, border control and pest management
- a 1996 amendment to the Local Government Act 1974 requires local authorities to adopt a long-term financial strategy for at least ten years (it should include environmental risks and asset management)
- the Hazardous Substances and New Organisms Act 1996, covering the importation and production of hazardous substances and new organisms and created the Environmental Risk Management Authority

In many cases, private sector models for risk management have been modified to meet public sector needs. Although at times this has proven difficult (for instance modifying models used within an organisational context for the community context), it has proven useful, primarily because it assists in integrating risk management into everyday decision-making.

Risk Management Process

The latest development is the approval of a non-mandatory standard for risk management - the joint Australia/New Zealand Risk Management Standard, AS/NZS 4360 - 1999 [Standards Australia, Standards New Zealand, 1999], which provides a process that can ‘be applied to any situation where an undesired or unexpected outcome could be significant or where opportunities are identified’ [Standards Australia, Standards New Zealand, 1999, p.iii]. The standard updates and replaces the previous 1995 standard. A significant improvement is the increased attention to aspects of risk communication, which is particularly important in the public sector context.

The process outlined within AS/NZS 4360 - 1999 includes the following elements:

- establish the context
- identify risks
- analyse risks
- evaluate risks
- treat risks
- monitor and review
- communicate and consult

It includes guidance on each of the elements, including templates for decision-making to assist with the process.

Risk Management Framework

While the processes associated with risk management are important, there is another aspect of risk management that is just as important from a public policy perspective. This is the wider framework that supports the risk management process. It includes elements such as:

- the level in society at different risks may arise and should be borne
- the accountability for ensuring risks are managed at that level
- the integration of all relevant aspects of community decision-making that are relevant to risk management
- the ability of those involved to effectively implement the risk management approach

These issues need to be addressed in order to ensure a risk management approach is successful. This is especially true when the approach is highly decentralised and non-regulatory as it is in New Zealand. In such a system, it is vital that those to whom decision-making power is devolved have the ability, and the incentive, to make decisions that contribute to the risk management approach.

RECENT GOVERNMENT DECISIONS

A Government review in 1995 found several areas where improvements could be made in its risk management approach to the management of natural hazards. Primarily these related to the integration between different organisations, and between different mechanisms (on a broad level) that could be used to treat risks (these are known as the 4 R's - reduction (of risk), readiness, response and recovery).

A number of consequent decisions were made, to implement the improvements. The approach taken was fully consistent with the market oriented mechanisms outlined earlier. First, Government approved a set of principles as the basis of an overarching emergency management framework:

- comprehensive and integrated emergency management systems (comprehensive emergency management relates to the 4 R's outlined above)
- the all hazards approach
- structures underpinned with appropriate technical information and expertise
- recognition and involvement of volunteer organisations
- declarations (of emergency) made at the most appropriate level of government by elected representatives
- individual and community responsibility and self-reliance
- the owner of any property be responsible for its reconstruction
- routine events and emergencies are best handled at the local level wherever possible

In addition, Government approved the concept of consortia of local government units working together to achieve effective emergency management. These consortia will ensure integration between the different units of local government, and between the different functions that impinge on the management of risks associated with natural hazards.

These decisions are currently being implemented. The Ministry for Emergency Management is preparing legislation to put them into effect, and supporting local government units that wish to implement them ahead of any legislative changes.

A More Integrated Approach to Managing the Risks from Natural Hazards

The Government's decisions, once implemented will go a long way to ensuring a framework exists for effective risk management insofar as it relates to natural hazards, including earthquakes. Perhaps most importantly, it ensures that all of the different treatment options (within the categories of reduction, readiness, response and recovery) can be assessed against each other, to ensure the optimal resources are applied, given the level of risk the community is willing to live with. For instance, by pooling these options into a common framework, decisions about whether to reduce the risks of earthquake (for instance through incentives to strengthen buildings or other methods), are made within the same framework as decisions to resource the ability to respond in the event of an earthquake. This allows rational decisions to be made about how to manage the risks - if the most efficient and effective decision is to increase the ability of a community to respond to the risk, rather than reducing the risk, then this option can be taken.

These decisions also ensure that other important aspects of a risk management framework are in place. They address the issue of where risks are borne by making individuals and communities responsible, and makes elected members of local authorities largely accountable for effectively managing risks.

The Government decisions also help to ensure that those implementing the risk management approach will be able to do so effectively. First, local government units will work together to ensure a 'critical mass' is achieved so that skilled personnel can be devoted full-time to these issues. Second, the professional development of the sector will be a focus of the Ministry for Emergency Management, which will work with existing education providers to ensure that appropriate courses and seminars are available.

What these changes will not do, and are not intended to do, is provide any new actual tools for the reduction of risks from natural hazards. These tools already exist within the Resource Management Act and the Building Act. Rather, these changes will ensure the tools are used in a more integrated fashion, to support a risk management approach.

ADVANTAGES OF NEW ZEALAND'S APPROACH

This paper has argued that a risk management approach is necessary for the management of natural hazards, when working in a largely decentralised and non-regulatory land-use and development framework such as New Zealand's. To some this may appear as a backward step - that we have had to accept this inferior way of managing hazards because of the wider frameworks within which we work.

However, the risk management approach actually has several advantages over the traditional, more prescriptive and centralised approaches. Perhaps most importantly, it ensures that risks are managed as part of wider decision-making. This addresses one of the common problems that those involved in hazard management have traditionally faced - they have been seen as a 'block' to development, because they are seen to argue against development or to limit it. Utilising a risk management approach means that the risks are considered in order to help achieve a goal, not as a blockage to achieving it.

A second, and related benefit is that the non-prescriptive approach allows those involved to come up with innovative and dynamic solutions to problems. Whereas in the past a particular project may have been disallowed because it contravened a particular regulation, now, as long as the project can be achieved without having undesirable effects, it will be allowed.

The two points outlined above relate to the management of risks being conducted in a manner that allows efficient and effective development. Another advantage of the approach taken in New Zealand is that it avoids the 'minimum compliance' syndrome whereby local authorities or others that are given very prescriptive requirements, seek to meet the requirements without any ownership or commitment to them.

In New Zealand there are now many examples where local authorities and others have taken ownership of the management of natural hazards, and have undertaken significant tasks, outside the requirements of the legislative framework, on behalf of their communities. Perhaps the best example is that of the 'lifelines' groups that have addressed the vulnerability of lifeline systems (such as land drainage, sewerage and water supply systems, telephone network, electrical and gas networks, transport systems and others). These studies have been undertaken by a number of agencies working together, including local authorities. Although they absorb scarce

resources, they are not required under any legislation. The fact that they have been undertaken in different parts of New Zealand points to the fact that many local governments, and others, have accepted responsibility for the risks that arise from the hazards they faced, and are acting responsibly to manage them on behalf of their communities.

DANGERS IN IMPLEMENTING A DECENTRALISED NON-REGULATORY APPROACH

The implementation of the reforms in New Zealand to date, and examples from elsewhere, provide lessons on dangers that need to be managed when implementing a non-regulatory and decentralised approach to the management of hazards.

Commitment Conundrum

One of the problems when implementing an approach such as that utilised in New Zealand is that there is a high level of reliance on local government to implement the approach satisfactorily. Given the many and sometimes conflicting pressures on local governments, this means that if the approach is to be implemented successfully a high level of commitment to the desired approach is required from local government. However, central government takes a non-regulatory approach, relying instead largely on constituency demands to ensure the approach is utilised. The problems in ensuring the commitment is present has been termed the 'commitment conundrum' [May et al, 1996, p.196].

Three options for central government to address the commitment conundrum have been suggested:

- doing nothing and waiting for a disaster to stimulate constituency demands
- provision of information about the risks that are present
- participatory planning processes to create consensus on the need for government action

[May et al, 1996, p.202]

On the whole, May and his colleagues conclude that participatory planning processes and to a lesser extent information programmes, are appropriate to address the issue;

> *"The bottom line is this. The commitment conundrum can be dealt with through adequate policy design and strong implementation. When the commitment of local governments to higher-level policy objectives is likely to be weak because of inadequate appreciation of the policy problem, information and participative planning provide useful tools for building the commitment of local elected officials"* [May et al, 1996, p.210]

As noted earlier, there are many examples in New Zealand where local government have clearly worked toward achieving goals that are consistent with the desired approach, beyond what is required of them in the legislation (for instance the lifeline groups). Participatory planning processes are integral to the Resource Management Act, where a range of consultation occurs in the development of the Regional Policy Statements and Plans and the District Plans.

Ability of Local Government to Implement the Approach

As with any major reform, new skills and different approaches will be required by those implementing the new frameworks. In addition, the organisations implementing a reform will often have to alter their allocation of finances and personnel in order to meet the new requirements. During the early implementation of the Resource Management Act, a common criticism of the reforms was that local governments were expected to undertake new tasks without sufficient guidance, and that there were insufficient personnel available with the requisite skills and abilities necessary to fulfil the legislative requirements.

While this issue is always going to be present to some extent, it should be minimised as much as possible. In the latest set of changes to the emergency management framework, New Zealand's government is addressing this issue through:

- a pilot programme (ahead of new legislation) to help determine policy and implementation approaches. Four consortia of local government units are participating in the programme

- a strong focus on professional development for the sector, particularly in regard to risk management
- provision of clear information regarding the expectations and goals that the changes are trying to achieve, and guidelines that can be used to help achieve them

Consistency Across Local Government Units

Another issue that has arisen during New Zealand's reforms is the level of consistency of implementation across local government units. Some believe that a lot of inefficiency has been introduced by each local government unit having to come up with its own solutions. However, this issue needs to be balanced against the desire for innovative and dynamic approaches, as well as the desire for approaches that meet the needs of the local community. Any attempt to address this issue should not jeopardise these important aspects of the reform. Possible solutions include:

- improved communication between local government units
- provision by central government of non-binding 'best practice' guidelines, preferably based on successful examples undertaken within local government
- more clarity of the goals of the policies

CONCLUSION

The paper has shown that within a decentralised and market-oriented development and land-use management system (such as New Zealand's), traditional approaches to the management of hazards are inappropriate. It has shown that risk management is an appropriate and useful tool to address the risks from earthquakes and other natural hazards. In addition, it has outlined a number of benefits that arise from such an approach. A key advantage is the consideration of natural hazards alongside other factors within everyday decision-making on the development of a community. This in turn ensures that the management of hazards is seen as an aid to assist development, rather than the traditional view that hazard management is a blockage to development. Finally, the paper has outlined a number of factors that need to be managed when implementing a decentralised approach such as that in New Zealand.

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